WHAT IS CLAIMED IS:

1. A flat plate heat transfer device, comprising:

a thermal-conductive flat case installed between a heat source and a heat emitting unit and containing a working fluid which is evaporated with absorbing heat from the heat source and is condensed with emitting heat to the heat emitting unit; and

one layer of mesh installed in the flat case and configured so that wires are woven to be alternately crossed up and down,

wherein a dispersion channel of a vapor is formed along a surface of the wire from a cross point of the mesh near the heat source, and a flow channel of a liquid is formed by means of a capillary phenomenon along a length direction of the wire from a mesh lattice near the heat emitting unit to a mesh lattice near the heat source.

2. The flat plate heat transfer device according to claim 1,

wherein the mesh is a screen mesh with a mesh number of 10 to 60.

3. The flat plate heat transfer device according to claim 1,

wherein the mesh is woven by wires with a diameter of 0.12 mm to 0.4 mm.

4. The flat plate heat transfer device according to claim 1,

wherein the thermal-conductive flat case has a height of 0.3 mm to 1.0 mm.

5. The flat plate heat transfer device according to claim 1,

wherein the flat case is configured by combination of an upper case and a lower case.

6. The flat plate heat transfer device according to claim 1,

wherein the mesh is a screen mesh, and

wherein a length direction of a lengthwise wire among the wires is identical to a direction in which heat transfer is conducted.

7. The flat plate heat transfer device according to claim 1,

wherein the thermal-conductive flat case is made of electrolytic copper foil, and

wherein an uneven surface of the electrolytic copper foil is configured as an inner side of the flat case.

8. The flat plate heat transfer device according to any of claims 1 to 7,

wherein the mesh is made of one selected from the group consisting of metal, polymer, plastic and glass fiber.

9. The flat plate heat transfer device according to claim 8,

wherein the metal is selected from the group consisting of copper, aluminum, stainless steel, molybdenum, and their alloys.

10. The flat plate heat transfer device according to any of claims 1 to 7,

wherein the flat case is made of one selected from the group consisting of metal, conductive polymer, metal coated with conductive polymer, and conductive plastic.

11. The flat plate heat transfer device according to claim 10,

wherein the metal is selected from the group consisting of copper, aluminum, stainless steel, molybdenum, and their alloys.

12. The flat plate heat transfer device according to any of claims 1 to 7, wherein the flat case is sealed using a manner selected from the group consisting of laser welding, plasma welding, TIG (Tungsten Inert Gas) welding, ultrasonic welding, brazing, soldering, and thermo-compression lamination.

13. The flat plate heat transfer device according to any of claims 1 to 7, wherein the working fluid is selected from the group consisting of water, methanol, ethanol, acetone, ammonia, CFC working fluid, HCFC working fluid, HFC working fluid, and their mixture.